1.9
P69P

LIBRARY
RECEIVED
JUN 20 1939
U. S. Department of Agriculture

THE PLANT DISEASE REPORTER

Issued By

Division of Mycology and Disease Survey

Volume XXIII Number 9

May 15, 1939

BUREAU OF PLANT INDUSTRY

UNITED STATES DEPARTMENT OF AGRICULTURE

THE PLANT DISEASE REPORTER

Issued by

THE PLANT DISEASE SURVEY

DIVISION OF MYCOLOGY AND DISEASE SURVEY

Volume XXIII Number 9

May 15, 1939.

IN THIS ISSUE

P. E. Hoppe contributes the sixth report on the relative prevalence and geographic distribution of corn ear rot fungi, for 1938, page 142.

Crown rust of oats has appeared unusually early in northern Arkansas, according to H. R. Rosen, page 148.

Other reports on diseases of cereals, page 149, include notes on rusts and loose smuts in Texas, by I. M. Atkins; wheat leaf rust in Kansas and in Iowa by C. O. Johnston and H. C. Murphy, respectively; and leaf rust on wheat and barley in Kentucky, by W. D. Valleau.

Reports on apple scab development, page 150, are from Rhode Island, by Frank L. Howard; from New York, by J. M. Hamilton, D. H. Palmiter, and R. W. Foote for various sections of the State; from Delaware by K. J. Kadow; and from Illinois by H. W. Anderson.

John W. Roberts reports, page 152, that scab infection on twigs of young peach trees has been unusually prevalent, and local infection on peach twigs in New York is reported by C. G. Small. Additional reports on peach diseases are of brown rot and frost injury in Delaware, by K. J. Kadow; and of peach leaf curl in Illinois, by H. W. Anderson.

Other reports on diseases of fruit crops, page 153, include red stele of strawberry in Kentucky, by W. D. Valleau; and development of pear scab and of cedar rusts, and pear blight injury in New York, by D. H. Palmiter, A. T. Williams, and W. D. Allen, respectively.

Tobacco downy mildew is reported from Virginia by S. B. Fenne, page 153; downy mildew and wildfire from Maryland, by E. A. Walker; and the bacterial leaf spots and cold injury from Kentucky by W. D. Valleau and E. M. Johnson.

Potato late blight has appeared on the Eastern Shore of Virginia, according to Harold T. Cook, page 154.

Marvin E. Fowler reports new localities for the ceratostomella disease of planetrees, page 154.

April weather, page 156.

RELATIVE PREVALENCE AND GEOGRAPHIC DISTRIBUTION OF VARIOUS EAR ROT FUNGI IN THE 1938 CORN CROP[1/]

P. E. Hoppe[2/]

Herein are summarized the results of a survey of the relative prevalence and geographic distribution of ear and kernel rot fungi found in the 1938 corn crop. This survey is the sixth of a series of annual surveys started in 1933. The results of the former surveys have been previously reported (P.D.R. 18: 186-189, 20: 26-30, 20: 312-316, 21: 222-224, and 22: 234-241). The methods employed in each of these surveys have been identical and briefly are as follows: Samples containing the sound and the damaged separates from carload lots of corn of known origin are sent by grain inspectors, located at terminal markets, to the Chicago Office of the Federal Grain Supervision, Bureau of Agricultural Economics, for review, after which they are sent to the writer. The commercially damaged kernels (previously separated by the licensed grain inspectors for the "total damage" determination) are plated to identify the fungi associated with the damaged kernels. The kernels are first surface-sterilized by immersion for 10 to 12 minutes in a 10 percent solution of the commercial product, "B.K." (3.5 percent sodium hypochlorite) after which they are plated on slightly acidified potato dextrose agar, incubated for 4 days at room temperatures, and then the organisms are identified.

Results of 1938 Survey

The weather conditions in 1938 during and following the maturation period of the corn crop were quite similar to those of 1937 and were generally very favorable for complete maturation of the crop. A total of 328 samples from 14 different States were plated. All the principal corn shipping areas were adequately represented except Ohio. A low level of ear rot in the field in Ohio in 1938 resulted in only slight amounts of "total damage" in the market receipts from this State, and consequently only a few samples were obtained for plating.

The plating results for the 1938 crop samples are summarized for States and for general geographic regions in Table 1. A brief discussion of the principal rot fungi found in the 1938 platings follows:

1/ Survey conducted by the Federal Grain Supervision, Bureau of Agricultural Economics, U. S. Department of Agriculture, the Wisconsin Agricultural Experiment Station, and the Division of Cereal Crops and Diseases, Bureau of Plant Industry, U. S. Department of Agriculture.

2/ Associate Pathologist, Division of Cereal Crops and Diseases, Bureau of Plant Industry, U. S. Department of Agriculture.

Table 1. Average percentages, by states and regions, of fungi recovered by plating damaged kernels from samples obtained from carload lots of corn received at terminal markets (1938 crop).

Origin of samples	Number carloads sampled	Percentages of kernels plating the organism indicated: Sound kernels	Diplodia zeae	Gibberella saubinetii	Fusarium moniliforme	Other fusaria	Nigrospora sphaerica	Mucors	Penicillium spp.	Aspergillus spp.	An unidentified fungus	Sterile kernels	Miscellaneous
Atlantic Seaboard States													
Maryland	33	0.8	35.9	19.9	20.7	0.7	0.1	1.1	2.5	0	7.1	0.7	10.5
Delaware	5	0.7	47.6	19.1	13.8	0.4	0.5	0.6	2.3	0	4.3	0	10.7
Average	38	0.8	37.4	19.8	19.8	0.7	0.2	1.0	2.5	0	6.7	0.6	10.5
Southern States													
Kentucky	5	0.9	41.2	0.9	46.0	0.9	0	0	0.7	0	0	2.0	7.4
Alabama	3	1.0	39.5	0	54.4	0	0	0	0	1.1	0	1.0	3.0
Tennessee	3	0	45.4	0	52.2	0.8	0	0.8	0	0	0	0	0.8
Average	11	0.7	41.9	0.4	50.0	0.6	0	0.2	0.3	0.3	0	1.2	4.4
East Central States													
Ohio	7	2.3	43.7	6.3	14.4	1.2	1.3	8.7	0	0	0.7	8.5	12.9
Indiana	36	0.9	58.6	5.4	11.9	1.1	1.1	2.5	6.6	0	0.6	3.0	8.3
Illinois	70	1.0	58.6	5.8	13.0	0.5	0.7	2.4	4.1	0	0.3	2.6	11.0
Average	113	1.0	57.7	5.7	12.7	0.7	0.9	2.8	4.7	0	0.4	3.1	10.3
West Central States													
Minnesota	29	1.1	3.0	3.7	34.4	1.9	3.5	6.9	16.3	0.4	0	3.4	25.4
Iowa	55	0.8	15.4	3.3	55.1	0.8	0.4	6.2	4.6	0.3	0.1	1.8	11.2
Missouri	15	1.6	9.9	0.3	69.9	1.2	0.3	5.4	2.2	0.1	0.3	2.6	6.2
Average	99	1.1	10.9	3.0	51.2	1.2	1.3	6.3	7.6	0.3	0.1	2.4	14.6
Western States													
South Dakota	1	0	0	0	28.6	7.1	0	9.5	0	7.2	0	2.4	45.2
Nebraska	49	1.1	0.1	0.1	75.0	0.4	0.1	7.7	2.7	1.0	0	4.4	7.4
Kansas	9	0.7	0	0	78.5	0	0	10.2	3.1	1.9	0	0.7	4.9
Colorado	5	1.9	0	0	81.2	0	0	6.2	0.4	0.6	0	4.1	5.6
Texas	3	1.3	4.8	0	31.9	0	0	29.0	0.9	13.8	0.9	11.9	5.5
Average	67	1.1	0.3	0.04	73.3	0.4	0.04	8.9	2.5	1.8	0.02	4.2	7.4

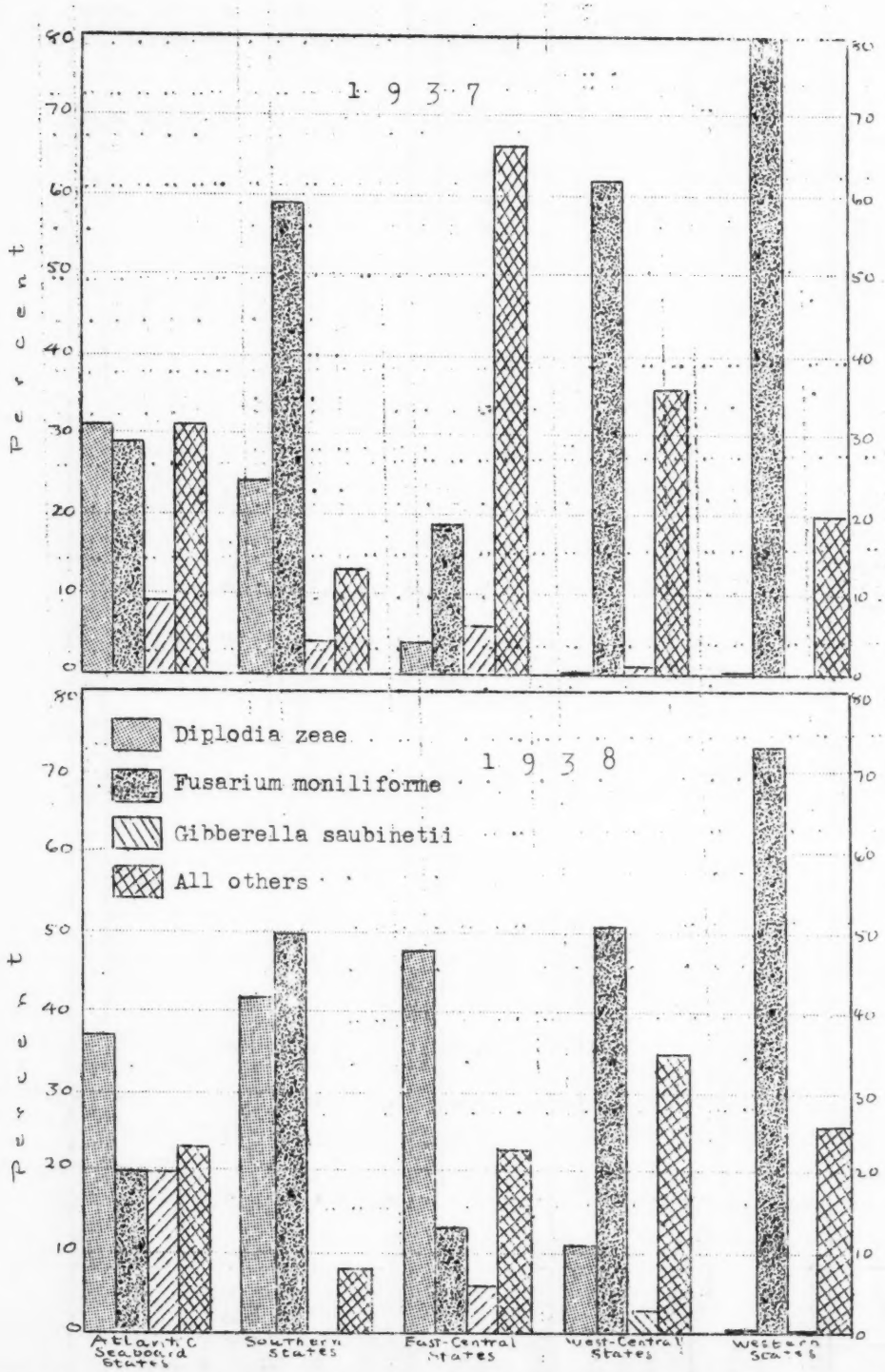

Figure 1. Relative prevalence of Diplodia zeae, Fusarium moniliforme, Gibberella saubinetii, and all other fungi, bacteria, sterile kernels, etc. in the damaged kernels obtained from carload lots of corn arriving at terminal markets from 5 general geographic regions in 1937 and 1938.

Diplodia zeae

The 1938 platings were characterized by an unusually high incidence of Diplodia (Table 1 and Fig. 1). Whatever the factors may have been that were responsible for general increases over 1937 in the relative prevalence of Diplodia, they apparently prevailed over a wide geographic range, including all corn shipping states east of the Mississippi River, and also portions of Iowa and Missouri west of the River. Regional differences in the incidence of Diplodia were, however, very striking and ranged from only 0.3 percent in the Western States to nearly 60 percent in the East-Central States. The extremely high percentages recorded for Diplodia in Illinois and Indiana in 1938 have been equalled only once in the previous surveys - in 1933.

Fusarium moniliforme3/

This fungus predominated in the samples from the Southern, West-Central, and Western States in 1938. Fusarium moniliforme was recovered from approximately 75 percent of the damaged kernels from Kansas and Nebraska. The minimum for F. moniliforme, 12.7 percent, was recorded for the East-Central States, in the region where Diplodia was most prevalent. In 1938 these two regions were nearly reversed with respect to the relative prevalence of these two ear rot fungi. The Southern States differed from either of the above-mentioned regions in that Diplodia and F. moniliforme occurred in about equal frequency. Southern samples in 1938 as in 1937 were characterized by a nearly complete absence of other ear and kernel rot fungi.

Gibberella saubinetii4/

Gibberella reached its greatest importance in 1938 in the Atlantic Seaboard States. Nearly 20 percent of the damaged kernels from this region plated Gibberella. This figure represents an appreciable increase for these States over 1937 (Fig. 1). The occurrence of Gibberella elsewhere throughout the Corn Belt in 1938 was rather sporadic, with the incidence somewhat lower than the 5-year averages. Gibberella ear rot was exceedingly common in southern Wisconsin in 1938. Platings made from a composite of the damaged kernels separated from hybrids and varieties included in a yield trial plot showed Gibberella to have been responsible for approximately 75 percent of the grain damage. This more or less local epidemic of Gibberella ear rot was reflected in the subsequent platings of terminal market samples from the northern tier of counties in Illinois, several of which showed as high as 50 percent Gibberella.

3/ Under this classification are included both Fusarium moniliforme and F. moniliforme var. subglutinans. F. moniliforme predominated overwhelmingly, but the variety subglutinans was not uncommon, occurring in all geographic regions, but more commonly in Minnesota.

4/ [= G. zeae].

Nigrospora sphaerica

Nigrospora was of very minor importance in the 1938 samples. Minnesota, with 3.5 percent Nigrospora, ranked highest for this fungus. In other States Nigrospora was of little consequence. Nigrospora appears to be of importance as an ear rot fungus only in those years when the maturity of the corn crop is affected by early frosts.

Penicillium and Aspergillus spp.

An interesting relationship was first observed in 1937 with regard to regional differences in the relative prevalence of these storage rot fungi. It was found that the ratio of Aspergillus to Penicillium increased markedly in the drier regions of the West and Southwest. This same situation prevailed in 1938. No cultures of Aspergillus were recovered from any of the samples from the Atlantic Seaboard or the East-Central States. Aspergillus became increasingly more prevalent the farther west the samples originated and reached a maximum of 13.8 percent in the Texas samples.

Regional Differences in Interannual Fluctuations in the Incidence of Different Rot Fungi

Mention was made of the fact that the 1938 market samples showed sharp increases over 1937 in the relative prevalence of Diplodia. A study of the survey records from 1933 to 1938 shows interannual fluctuations in the incidence of the various rot fungi to have been much greater in some regions than in others. The East-Central States region especially has been marked by sharp increases and decreases for the various fungi in this 6-year period. A comparison of the fluctuations, from year to year, in the Maryland-Delaware region with fluctuations in Illinois (Fig. 2) serves as a typical example. This comparison is of particular interest because Diplodia, Fusarium moniliforme, and Gibberella all occur normally and commonly in both these areas. The relative uniformity of the data for the eastern samples from year to year is in sharp contrast with the erratic rises and falls in the relative prevalence of the various fungi in Illinois. Diplodia, for example, was the principal fungus in the samples from the Seaboard States in each of the 6 years, fluctuating from a minimum or 30 percent in 1937, to a maximum of 52 percent in 1935. In Illinois, on the other hand, the fluctuations in the incidence of Diplodia ranged between slightly less than 4 percent in 1935, to 59 percent in 1933. Diplodia was overwhelmingly the leading fungus in Illinois both in 1933 and 1938 but was of negligible importance in either 1935 or 1937. From Figure 2 it can be seen that the highs and lows for Diplodia in the 2 regions mentioned above are not coincident, indicating that the environmental influences which affect disease were independent of each other in these regions. Another interesting fact shown in the figure is that the results obtained in Illinois in 1933 were not duplicated again in this State until 1938. Had this survey been terminated after the fifth

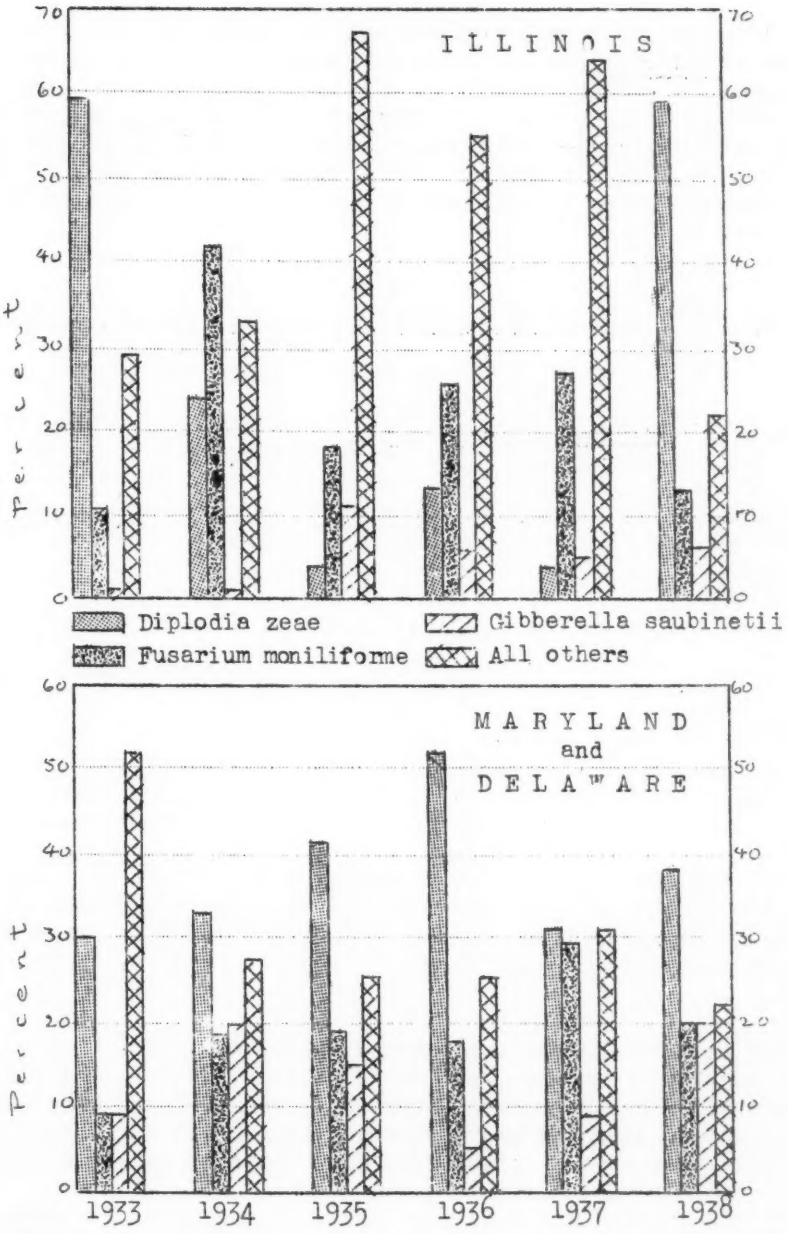

Figure 2. Relative prevalence of Diplodia zeae, Fusarium moniliforme, Gibberella saubinetii, and all other fungi, bacteria, sterile kernels, etc. in the damaged kernels obtained from carload lots of corn arriving at terminal markets from Illinois and the Maryland-Delaware region from 1933 to 1938, inclusive.

year (1937) it might have been erroneously concluded that the general decline in percentage of Diplodia in the Illinois damaged corn samples was associated with the increasing acreage of hybrid corn in this State. The 1938 results, which show a return of the high 1933 incidence of Diplodia, are an excellent illustration that many years data are necessary in studies of this type. Especially is this true for regions subjected to the diversity of weather conditions, from one year to the next, experienced in the Middle West in the past decade.

EARLY APPEARANCE OF CROWN RUST OF OATS IN ARKANSAS IN 1939

H. R. Rosen

Crown rust [Puccinia coronata avenae] pustules were first found at the University Agricultural Experiment Station Farm, Fayetteville, on April 19, 1939. This is the earliest date recorded for this rust in the northern part of Arkansas. It was found in the winter oat plots on the variety Lee. Out of 72 rod rows of this variety that were carefully examined, 183 pustules were counted.

The distribution of the pustules may be of interest. Only 12 of the 72 rows showed infected plants. In 6 of these 12 rows one to 3 scattered pustules were found, while in the remaining 6, in which 13 to 30 pustules were counted, they were centered around single, infected leaves. The distribution of the pustules in these instances suggested that most of the infections were secondary and were derived from one or more older pustules. This suggestion appeared obvious because in some instances there were clusters of small secondary sori immediately surrounding larger ones.

Thus it appears that the first infection with crown rust must have occurred at least 20 to 28 days prior to the earliest observance of the rust. Unless it is assumed that crown rust overwintered in these plots, the first infections may be considered to have occurred toward the end of March.

Another interesting point concerned in the distribution of these pustules was the fact that they were found only on that side of the plants facing the south. Since no pustules were observed on these plants during the fall and winter, does the above observation suggest early spring infection by wind-blown spores coming from more southern regions?

At the Rice Branch Station, Stuttgart, Arkansas, a few crown rust pustules were found by C. R. Adair on April 15 on the Lee variety. At this station, the oats were much farther advanced in growth than at Fayetteville so that it seems rather surprising that so many more early infections were found at the latter station. However, the writer has observed the same thing in previous years and, as a tentative explanation, it is assumed that

the greater abundance of earliest infections at the more northern and much higher station at Fayetteville is due to its presumably greater accessibility to wind-blown spores. In addition to having a much higher altitude, northwest Arkansas appears to be in more direct line with the prevailing winds which sweep from Texas oat-growing regions than eastern or southern Arkansas.

Whatever the explanation may be for the appearance of these early crown rust infection in Arkansas in 1939, the presence of such early infections leaves little doubt that crown rust will appear in severe epidemic form in this region if the amount of rainfall in May and June should be above average.

(University of Arkansas, College of Agriculture.)

OTHER REPORTS ON DISEASES OF CEREALS

RUSTS AND LOOSE SMUT ON SMALL GRAINS IN TEXAS: Weather conditions during April have been favorable for the growth of small grains and rather unfavorable for the spread of rust. Mean temperature for the month was 63.3 or only -.6 degrees below normal. Maximum temperature was 88° F. and minimum was 32° F. with a light frost on the seventh. The last killing frost of the season was March 2. Precipitation for the month was 5.02 inches, the most of which was received in one rain on the fifteenth. The total precipitation at that time was 4.40 inches and was accompanied by considerable hail. As only the earliest barley and oat strains were heading at that time, damage was much less than would have occurred at a later date.

Although mean temperatures for the month have been about normal, the month has been unusual in that temperatures have been uniformly cool throughout the month. These conditions combined with a relatively small number of light dews, have not provided favorable conditions for spread of rust. Leaf rust of wheat, Puccinia triticina [P. rubigo-vera tritici], has continued to spread slowly so that on susceptible varieties the infection is sufficiently high to cause some damage. Crown rust of oats was found on April 14 but has spread very little. There is a light infection in most fields however. Two infection centers of stem rust of wheat [P. graminis] have been found in the county but there is no general infection yet. Loose smut of wheat and barley [Ustilago tritici, U. nuda] is prevalent and the amount of infection is higher than any recent year.

The maturity of small grains in this section is about normal. Fall sown oats and barley are approaching full head. Fields of Fultz and Red May wheat are also approaching full head with the Mediterranean types just reaching the heading stage. (I. M. Atkins, Division of Cereal Crops and Diseases, Texas Substation No. 6, Denton, Texas, April 30.)

WHEAT LEAF RUST IN KANSAS: Crop conditions in south-central Kansas are excellent owing to frequent rains or snows during the fall and winter. Winter wheat in that area has made abundant top growth and now is jointing. Leaf rust overwintered there in considerable abundance and now is easy to find in nearly every field. Not much overwintering of leaf rust occurred to the westward or eastward of the area and it seems clear that there was an island of early developing winter wheat in south-central Kansas and adjoining parts of Oklahoma on which leaf rust overwintered and from which it may spread rapidly in all directions. (C. O. Johnston, April 10. Cereal Courier 31: 30. April 25.)

WHEAT LEAF RUST IN IOWA: Leaf rust infection on winter wheat was first observed on May 1 in the 20th-acre plots at the Agronomy Farm, Ames, Iowa. We have found only primary infection and very few pustules. For the past two weeks our weather has been cool and dry, which is unfavorable for rust development. (H. C. Murphy, Division of Cereal Crops and Diseases, Ames. May 3.)

LEAF RUST ON WHEAT AND BARLEY IN KENTUCKY: Leaf rust is well established on the lower leaves of wheat [Puccinia rubigo-vera tritici] and barley [P. anomala] at Lexington. Wheat is about half grown. An occasional barley plant is heading. (W. D. Valleau, Kentucky Agricultural Experiment Station. May 7.)

REPORTS ON APPLE SCAB DEVELOPMENT

APPLE SCAB DEVELOPMENT IN RHODE ISLAND: (April 29) Cool cloudy weather has slowed up the development of both the apple scab fungus and the fruit buds. McIntosh buds are in the "delayed dormant" stage at both Wallum Lake and Kingston and the first mature ascospores were observed in old leaves from both of these places today. No spores have been shot to date.

(May 6) A most unusual situation is manifesting itself in so far as the overwintering of the pathogen, Venturia inaequalis, in old apple leaves is concerned this year. Leaves from Greenville and Kingston have been yielding comparatively few perithecia of the apple scab fungus this spring. The leaves contain perithecia and some pycnidia of a couple of other fungi. Leaves from Wallum Lake, which is in the northwest corner of the State and farthest inland, have been yielding V. inaequalis perithecia in abundance and to the almost complete exclusion of other fungi. These facts suggest the following hypothesis:- that the high velocity winds and the salt spray of the hurricane of last September 21, 1938 either killed the pathogen on the surface of the exposed leaves, or the leaves were dried out and killed so that they were unsuitable as a substratum for the saprophytic phase of the fungus. We shall look into this further and have a

more complete report next week. Up until this date no ascospores have been shot in the orchards although a few minutes wetting of the leaves in the laboratory causes them to be discharged. (Frank L. Howard, Rhode Island Agricultural Experiment Station.)

NEW YORK: Western New York.--On April 26 two samples of McIntosh leaves were obtained, one from average conditions but rather on the dry side and one from a wet location which would give us a maximum development. Seventy-three perithecia out of seventy-eight from the wet leaves contained more than 50 percent mature spores, and sixty-one out of seventy-three from the average leaves contained more than 50 percent mature spores. Both samples gave a light spore discharge when tested in petri dishes.

Indications are that we can expect a fair amount of scab if any rain is to follow, since green is already showing. Danger from scab infection no doubt will materially increase with each successive rain. (J. M. Hamilton, Geneva, April 27.)

Hudson Valley.--Spores of the scab fungus are fully mature now and ready for a heavy discharge with the next rains. Leaves collected in Rhinebeck, Dutchess County, showed practically all perithecia with over 50 percent of the spores colored.

Rains during April 27 and 28 discharged some spores in the orchard. More rain fell around Kinderhook, Columbia County, than at Poughkeepsie and kept the trees wet for a longer period. The temperature however, was cool so growers who followed the rain with the delayed dormant spray will probably not be troubled with scab from this rain. Unsprayed trees may develop some sepal infection in sections where the fruit clusters are exposed. (D. H. Palmiter, Poughkeepsie, April 28.)

Clinton County.--Weather remains cold and wet. Apple buds are swelling slightly. Fred Lewis, Plant Pathology Department, Cornell, reports 5 percent of scab spores present in old leaves in a mature condition. This is a larger percentage of mature spores than we usually have when trees are in the stage they are now. Pre-blossom sprays will be an important factor in the control of scab this year. (R. W. Foote.)

DELAWARE: Apple scab was first observed on April 25. This infection evidently occurred on the fifth or sixth of April. We have had several other scab rains since then and I expect that we will have a real outbreak in areas which were not properly protected. (K. J. Kadow. April 29. Delaware Agricultural Experiment Station.)

ILLINOIS: Primary infection of apple scab was observed at Urbana on April 27. It was in a very early stage, and few spots could be found. The trees were in the cluster bud stage but few of the clusters had started to

separate. Scab was also observed at Olney, Illinois (on a line with St. Louis, Missouri and Vincennes, Indiana) on April 28. The trees were in full bloom on that date. The spots were still very inconspicuous and even on unsprayed trees were hard to find. Perithecia are still crowded with mature ascospores in all sections of the State. (H. W. Anderson, University of Illinois.)

SOME REPORTS ON DISEASES OF PEACH

GENERAL PREVALENCE OF SCAB INFECTION ON PEACH TWIGS: Scab (Cladosporium carpophilum) on twigs of peach nursery trees and young unsprayed trees in orchards has been unusually prevalent and destructive. During the past winter and spring the writer has received specimens from Maryland, Virginia, New Jersey, Indiana, and Tennessee. Although the lesions are superficial, heavily infected twigs die. That death is caused by desiccation is indicated by the fact that when infected twigs with cut ends in water are placed under a bell jar, droplets of water exude from the scabbed areas only. With most specimens characteristic conidia of the pathogen were produced after a day or two in moist chambers. Infection occurred in 1938 and on the growth of that year. (John W. Roberts, Division of Fruit and Vegetable Crops and Diseases.)

SCAB ON PEACH TWIGS IN NEW YORK: Ulster County.--Peach scab was found on twigs of nursery stock received by one grower, the disease practically covering the entire surface of many of the twigs. (C. G. Small, Weekly News Letter May 8.)

BROWN ROT AND FROST INJURY IN DELAWARE: Peaches have bloomed throughout the State and there is from 1 to 5 percent of blossom blight caused by the brown rot fungus [Sclerotinia fructicola]. In many cases, the infection of the blossom has proceeded into the wood causing twig cankers. In no case has the yield been affected by the disease.

From nothing to 80 percent damage was done by frost. The greatest losses occurred in Sussex County. (K. J. Kadow. April 29. Delaware Agricultural Experiment Station.)

PEACH LEAF CURL IN ILLINOIS: Peach leaf curl [Taphrina deformans] was observed in the orchard at Olney on April 28. No serious outbreak of this disease is expected, since only very light infections have been observed to date. (H. W. Anderson, University of Illinois.)

OTHER REPORTS ON DISEASES OF FRUIT CROPS

RED STELE OF STRAWBERRY IN KENTUCKY: Red stele affected plants were received from Johnson County. The steles of some of the roots contained numerous oospores [of Phytophthora]. Parts of rows of Premier were killed while plants in an adjacent row were alive. Aromas were alive in the same field. The injury had apparently occurred some months ago. (W. D. Valleau, May 7. Kentucky Agricultural Experiment Station.)

PEAR SCAB IN NEW YORK: In the Hudson Valley pear scab [Venturia pyrina] spores are mature and ready to discharge. (D. H. Palmiter, Poughkeepsie, April 28.)

DEVELOPMENT OF CEDAR RUSTS IN NEW YORK: Dutchess County.--Telial horns of the apple rust (Gymnosporangium juniperi-virginianae) on red cedar are about one-half inch long. First signs of the quince rust (G. clavipes) are conspicuous after light rains of April 28 in the northern part of the county. (A. T. Williams, Weekly News Letter, May 1.)

BLIGHT INJURY FROM LAST YEAR IN NEW YORK: Yates County.--1938 blight [Bacillus amylovorus] injury is conspicuous in all pear blocks, except where a full bloom spray of bordeaux was applied during the last two seasons. (W. D. Allen, Weekly News Letter, May 1.)

REPORTS ON TOBACCO DISEASES

TOBACCO DOWNY MILDEW IN VIRGINIA: Blue mold, Peronospora tabacina, has become quite general in all of the flue-cured and dark tobacco areas and to some extent in Burley. Severe injury has occurred in many plant beds in Charlotte, Halifax, Lunenburg, Mecklenburg, and Brunswick Counties. The most severe damage occurred in the counties east of Mecklenburg where there will apparently be some plant shortage on individual farms. In the other counties the disease has not yet reached its peak. Most growers think that blue mold is considerably more severe this year than in 1938 but not as severe as in 1937. Demonstrations in the use of benzol, paradichlorobenzene, and red copper oxide-cotton seed oil spray showed very good control in practically every case where it was used correctly. (S. B. Fenne, Extension Plant Pathologist, May 11.)

DOWNY MILDEW AND WILDFIRE IN MARYLAND: Blue mold appeared in Maryland on May 1 in two counties, and since then, has appeared in all the other tobacco-growing counties. The plants in Maryland tobacco beds are extremely small; and if the weather continues to be cold, it appears that it will be an ideal condition for considerable destruction.

Wildfire [Bacterium tabacum] is more abundant than usual. (E. A. Walker, May 4, University of Maryland Cooperative Extension Work.)

TOBACCO DISEASES IN KENTUCKY: Severe outbreaks of wildfire [B. tabacum] and angular leaf spot [B. angulatum] have occurred in the tobacco beds in the southern half of the State. In many instances these have been diagnosed as blue mold.

Tobacco plants in all parts of the State have been severely injured by cold. Very small plants turn yellow and appear more subject to root diseases (probably caused by Pythium or pythium like organisms) and many plants have died. The larger plants have yellow growing point leaves which are narrow. While we have seen severe cold injury in individual beds before this year it is more general and severe than in the past 20 or more years. Plants are very late all over the State because of cold and almost constant rains until the past few days. (W. D. Valleau and E. M. Johnson. May 7. Kentucky Agricultural Experiment Station.)

LATE BLIGHT ON THE EASTERN SHORE OF VIRGINIA

Harold T. Cook

Potato plants affected with late blight (Phytophthora infestans) were collected in Northhampton County on the Eastern Shore of Virginia on May 9 and sent to this office. County agent J. E. Tankard reports that the entire crop on the farm from which these specimens came is showing the disease.

The weather reports for Norfolk show that from a trace to 1.08 inches of rain occurred daily from April 25 through May 3. During this period the minimum temperature ranged from 39° to 68° and the maximum from 50° to 89° F. During most of this period the mean temperature was below normal.

(Virginia Truck Experiment Station.)

CERATOSTOMELLA (ENDOCONIDIOPHORA) ON PLANETREES

Marvin E. Fowler

The Ceratostomella (Endoconidiophora) that Jackson and Sleeth (4) isolated consistently from diseased London planetrees (originally reported as Platanus orientalis L. but later (5) identified as P. acerifolia Willd.) in Delaware County, Pennsylvania, and reported by them to be capable of parasitizing inoculated young trees, has been found recently in two widely separated localities, one of which is hundreds of miles from any previously reported infection. The fungus was isolated from specimens collected by L. W. R. Jackson in March 1939 from two diseased London planetrees at Claymont, Delaware, and from specimens submitted in April 1939, at the suggestion of A. Robert Thompson, of the National Park Service, from a diseased

planetree (species not yet determined) in the National Military Park at Vicksburg, Mississippi. This latter location was visited subsequently by B. S. Crandall, of the Division of Forest Pathology, and the fungus was also isolated from specimens collected by him from an additional diseased tree.

This fungus has been reported previously in Pennsylvania (2, 3, 4, 5, 6), Maryland (2, 5, 6), New Jersey (2, 6), and the District of Columbia (1, 2, 5, 6). There have been reports of its presence in Virginia (6) and of its previous discovery in Delaware (2) but these are unconfirmed.

The fungus was isolated not only from the discolored tissue in the trunk of an infected London planetree found in Washington, D. C. in September 1938 but also in this same tree from discolored tissue in a 3-inch root immediately below the stump and approximately 2 feet below the ground surface.

Jackson and Sleeth (5) reported that the fungus was fruiting on the surface of old wounds under natural conditions. When the diseased planetree was discovered recently in Washington the conidial stages of the fungus were found in the discolored cambium region. The conidial stages of the fungus had already developed in the cambium region when the specimens were received from the diseased trees at Claymont, Delaware, and Vicksburg, Mississippi.

The chunks of discolored wood cut from the two diseased trees at Vicksburg were mailed to Washington by Crandall in sealed cardboard cartons. In the 4 or 5 days of transit, perithecia of the fungus developed in abundance on discolored portions of freshly cut surfaces. They occurred also on discolored portions of uncut surfaces.

The investigation of the planetree blight and of its associated fungi has been assigned to Curtis May. It will be appreciated if specimens from suspected trees are sent to Dr. Curtis May, Forest Pathology, 8 Whippany Road, Morristown, New Jersey.

Literature Cited

1. Crandall, Bowen S. Endoconidiophora fimbriata on sycamore. Plant Disease Rep. Sup. 90: 98. 1935.

2. Howe, Hollis J. The plain truth about the plane tree. The Shade Tree 12. 3 pp. 1939.

3. Jackson, L. W. R. A new disease of the oriental plane-tree (Platanus orientalis L.) prevalent in the Philadelphia area. 11th Nat. Shade Tree Conf. Proc.: 77-79. 1935.

4. Jackson, L. W. R., and Bailey Sleeth. A new disease affecting Platanus orientalis in the eastern United States. Phytopathology 25: 22. 1935.

5. Jackson, L. W. R., and Bailey Sleeth. Disease killing plane trees. Forest Leaves 27 (2): 5-6, 14-15. 1937.

6. [Pirone, P. P.] London plane blight. New Jersey Agr. Exp. Stat. Nursery Disease Notes 11: 21-24. 1938.

(Division of Forest Pathology, Bureau of Plant Industry.)

APRIL WEATHER

April was generally cool and wet from the Central Valleys northeastward and warm and dry from the Great Plains westward.

Figure 1 shows that, except for a small section along the central and south Atlantic coast, temperatures were generally subnormal from the Mississippi Valley eastward. Departures were not marked, being mostly from 2° to 3° subnormal in the Ohio and central Mississippi Valleys and the Lake region, but in northern portions of the Northeast they were from 4° to 5° below the seasonal average. Throughout the Great Plains temperatures for the month were fairly close to normal, but in most areas from the Rocky Mountains westward, the month was from 4° to as much as 7° warmer than usual. The warmest section embraced the western Great Basin and the Great Valley of California where temperatures averaged 6° to 7° above normal.

Figure 2 shows that precipitation was abnormally heavy in the central Ohio Valley, portions of the lower Missouri Valley, and the middle Atlantic coast. In these areas precipitation ranged from 150 to over 200 percent of normal, with the greatest percentage, 239, at Cincinnati, Ohio. The month was also wet in portions of the Southwest, most parts of New Mexico, southeastern Colorado, and the Panhandle of Texas and isolated areas elsewhere. Precipitation for the month was subnormal throughout most of the eastern Cotton Belt, the southern Great Plains, and from the central Rocky Mountains westward and northwestward. In much of Texas precipitation for the month averaged less than half of normal and locally was only 4 percent of the usual monthly amount. This dry area extended northward over Oklahoma and portions of Kansas, while markedly deficient amounts were also noted in parts of South Dakota, the Great Basin, and in Pacific Coast States.

(Weekly Weather and Crop Bulletin for the week ending May 2.)

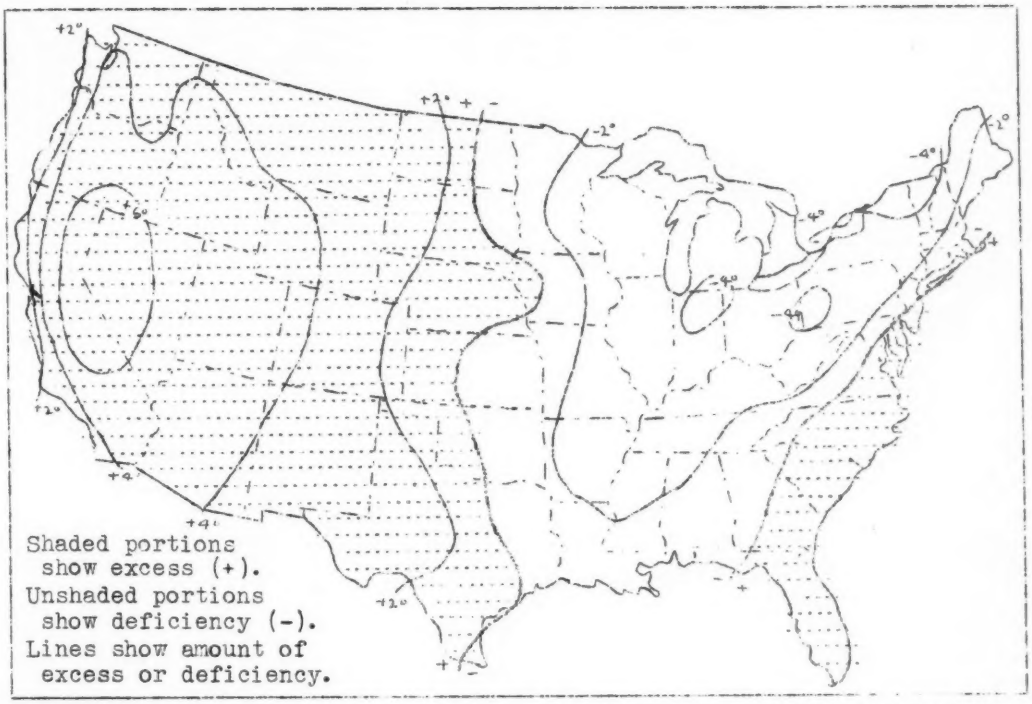

Fig. 1. Departure of Mean Temperature from the Normal for April 1939.

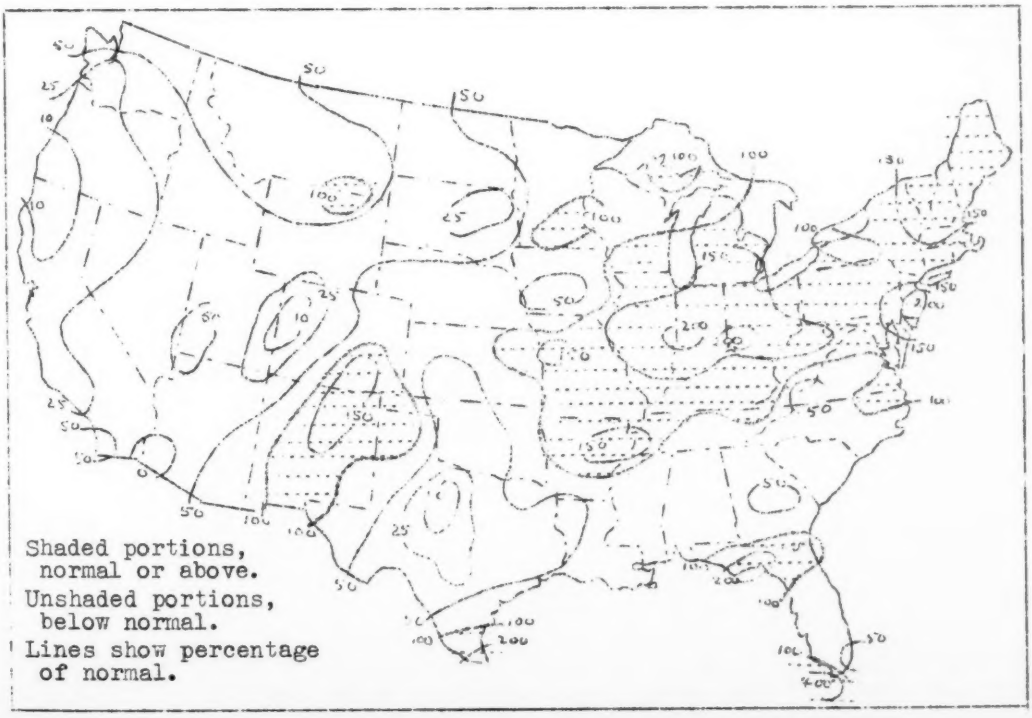

Fig. 2. Percentage of Normal Precipitation for April 1939.